Digital Solutions for **Affordable Housing** Challenges

How technology is bringing Government the efficiency needed to implement innovative affordable housing approaches.

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Municipalities across the country are facing a host of challenges when it comes to solving the demand for affordable housing — dated zoning ordinances, rising costs of construction, and delays in permitting time, just to name a few.

Avolve Software investigated the advancing role of technology in supporting affordable housing schemes, speaking to government jurisdictions and technology experts.

No Single Issue When it Comes to Affordable Housing

The housing crisis in the U.S. has reached new heights in recent years, exacerbated by the lingering economic effects of the pandemic. The confluence of robust market demand and a restricted housing supply has given rise to affordability concerns, affecting families in progressively higher income brackets.

According to the International City/County Management Association, in 2021, half of all rental households were "cost-burdened," meaning more than 30% of gross income was spent on rental costs. Put another way, one in six American families spent more than 30% of their income on housing.

Simultaneously, affordable housing projects often encounter bureaucratic hurdles, facing delays in the permitting and approvals process. "Permitting time is a major obstacle in construction, particularly for affordable housing," says Matt Foley, a registered professional engineer and Co-founder of AI firm CodeComply. Underscoring these challenges, Foley notes that the average time-to-permit for a new build in one large Californian city is 600 days.

New builds are not the only way to solve affordability in housing, but zoning restrictions often prevent adaptive reuse, multi-family homes, Accessory Dwelling Units (ADUs), or otherwise pose limitations on achieving the necessary unit numbers for affordability.

"Jurisdictions face a number of challenges, whether it's zoning restrictions that prevent you from inserting the number of units that make the project affordable or make it financially viable for lenders, or an issue with building codes that requires the City to readapt older buildings, among others," explains James Foster, General Manager of the Development Resource Center, City of Detroit.

Additionally, local jurisdictions grapple with state- and federal-mandated requirements for affordable housing, placing an additional burden on agencies not specialized in construction.

"Mandates are being put on local agencies, but the local agencies aren't in the business of construction," says Christine Brakefield, CBO, Solution Consultant Manager for Avolve Software. "Meanwhile the construction industry is struggling with staffing, particularly when it comes to finding skilled professionals in the trades which creates an additional cost burden," she adds.

The Role Technology Plays in Addressing Affordable Housing Challenges

Technology has emerged as a pivotal force in tackling affordable housing challenges, streamlining processes for enhanced efficiency, and enabling data-driven decision making. From electronic plan review software to generative AI, technology is revolutionizing the way cities conceptualize and plan for affordable housing. "Affordable housing is a top priority for our mayor, and leveraging technology for planning has significantly improved efficiency," says Foster.

Foster has seen firsthand the positive impact of technology on planning for affordable housing in Detroit, especially in variances and re-zoning approval processes. The adoption of electronic plan review, in particular, has optimized workflows, expediting the approval of adaptive re-use proposals.

"We have a variety of vacant buildings and lots that could be used to create housing; any proposal for which requires several agencies to review and approve the plans for any adaptive reuse unit," Foster says. "As a result of using electronic plan review, we've smartly been able to navigate our work groups to more quickly approve these proposals."

The efficiencies gained through electronic plan review have not only facilitated quick project approvals but also enabled Detroit to efficiently access state funds for affordable housing.

"There are deadlines for submittals of projects across the state, and these projects can be very competitive," Foster says. "We've been able to quickly revive and approve these particular projects using the workflows that we created both in our planning and building workflows to gain access to this funding."

AI-powered tools, modular housing, and GIS also show promise in addressing affordable housing challenges.

Inefficiency within the permit approval process is a significant factor contributing to delays in affordable housing plans. AI-driven tools have the potential to help streamline repetitive tasks, verify compliance, and ensure accuracy, ultimately expediting the entire approval procedure.

"We're hoping that AI can cut down on that plan review time and help construction move a bit faster and inherently drive down some of the cost of construction," Foley says. The pandemic-induced shift to digital submissions has created an opening for greater technology adoptions, with Foley anticipating a more ready embrace of technology tools now and in the future.

"I think adoption of technology is going to happen a lot faster now that more professionals are comfortable with tools like Avolve," adds Foley.

Modular housing, often misunderstood in the U.S., is recognized as a viable solution that leverages technology for affordable housing.

"Modular housing has been widely adopted across parts of Asia and Scandinavia, but in the U.S. many people equate it with a mobile home," Brakefield says.

Also known as prefabricated homes, modular housing enables a systematic and replicable approach for jurisdictions, applicable to both the construction process and the permitting perspective.

"We're finding a lot of efficiency gains in the actual construction process by doing modular versus conventional, but also in the approval and regulatory process as the transfer of information for approvals is more seamless," Brakefield says.

GIS emerges as another valuable tool to solve affordable housing challenges. GIS enables access to thousands of data-points/variables to inform and optimize zoning decisions and support municipalities with better resource allocation through a data-drive approach.

"GIS allows you to drop a point and say 'If we were to build here, how many resources are available within half a mile of this location? What are these areas zoned for? What other developments are taking place?'," said Becky Tamashasky, Chief Innovations Officer for Avolve Software. "That kind of analysis — the spatial analysis — enables us to start to understand where we can create a good quality of living that's still affordable for the residents of the city," she added.

Encourage innovative approaches

Examine the potential impacts of minimizing minimum lot sizes, eliminating zoning-based parking requirements, and exploring the viability of accessory dwelling units to enhance affordability. "electronic plan review has played a crucial role in implementing inventive solutions for the City of Detroit, allowing us to navigate the process more efficiently and effectively," says Foster.

Explore diverse technologies for your specific needs

Recognize that there is no universal technology solution for addressing affordable housing challenges. Instead, municipalities can gain advantages by adopting a combination of integrated tools that leverage the unique strengths of each.

Engage with technology vendors, participate in demos, and thoroughly evaluate how each tool or software can effectively support your specific requirements.

Build a strong business justification

Develop a compelling business case for the adoption of new technology, incorporating a thorough financial analysis encompassing cost savings and return-on-investment. Seek input from subject matter experts (SMEs) to tailor the message for optimal resonance with decision-makers.

Brakefield suggests articulating the potential impact accurately; for instance, illustrating how expedited plan reviews could have translated into additional permit fees, thereby generating more resources for the city's broader objectives while facilitating the swift progress of affordable housing projects. "Purchase and adoption hinges on a clear and substantial benefit," emphasizes Brakefield.

Innovative Approaches to Affordable Housing with Technology

Fulfilling the responsibility of a community means ensuring all citizens have a safe place to call home. Jurisdictions that find creative solutions to affordable housing will meet the current needs of their community and support the community's vision for the future.

"We want to be sure that our city is accessible to everyone, and technology is playing a vital role in ensuring we do just that," Foster says.

Avolve Software

Avolve Software is the global leader in electronic plan review software. With more than 300 customers across five countries, Avolve's significant investment in research and development ensures that its plan review solutions meet the needs of jurisdictions of all sizes. Its leading solutions ProjectDox, DigEplan Pro, and DigEplan, automate and streamline the permitting process, removing the inefficiencies of paper or non-integrated plan review solutions. The solutions ensure a robust and proven electronic plan review that enhances jurisdiction productivity and economic growth.

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